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SCIENTIFIC RESEARCH IN THE 17th CENTURY,

AS EXEMPLIFIED IN THE DIARY OF MR. SAMUEL PEPYS, F.R.S.

By Claude Webster.

The readers of the 'Diary of Mr. Samuel Pepys, F.R.S.,' must include pretty well all those who have essayed to make any acquaintance with the ordinary literature of their country; and great no doubt has been the amusement they have derived from their perusal of the confessions of the somewhat sensuous gentleman, who, jotting down day by day the varied incidents of a not uneventful life, scarcely contemplated the ultimate revelation of his sayings and doings, concealed as they were in a caligraphic character so obscure as well nigh to preclude the expectation that they would ever come to light at all.

Samuel Pepys, born in 1632 and dying in 1703, filled several important offices in connection with the Navy, and eventually that of Secretary to the Admiralty, in the reigns of Charles II. and James II., being also a Member of Parliament during a portion of this period. The 'Diary,' commenced in 1659-60, extends down to the year 1669, and was kept throughout in shorthand. It finishes thus characteristically:—

"And thus ends all that I doubt I shall ever be able to do with my own eyes in the keeping of my journall, I being not able to do it any longer, having done now so long as to undo my eyes almost every time that I take a pen in my hand; and therefore, whatever comes of it, I must forbear. . . . And so I betake myself to that course, which is almost as much as to see myself go into my grave; for which, and all the discomforts that will accompany my being blind, the good God prepare me!"

The late Lord Braybrooke, to whom the world is indebted for the 'Diary,' has prefixed a sketch of Pepys' life, in which some stress is laid upon his literary attainments, which had raised him in 1684 to the high station of President of the Royal Society,* and which he held for two years; and at the present time the opinion prevails that Pepys was a much more considerable person than the ordinary reader of the 'Diary' might suppose him to be. How far he merited the character of a man of letters and science, the following extracts, perhaps, will not do much to show. His claims to so exalted a position must rest upon a basis altogether different to that disclosed in the 'Diary.' Be this as it may, it is the purpose of this article to exhibit Pepys as he wrote himself down; firstly, as a reporter of facts pertaining to Natural History and Science, imparted to him in conversations with his acquaintance; and next as a Fellow of the Royal Society, when that now deservedly famous corporation became an established fact. The quaintness, rising almost to simplicity, with which these details are recorded in no respect detracts from their amusing quality.

Commencing, then, with an entry under date September 11th, 1661, we read:—

> "To Dr. Williams, who did show me how a dog that he hath do kill all the cats that come thither to kill his pigeons, and do afterwards bury them; and do it with so much care that they shall be quite covered; that if the tip of the tail hangs out, he will take up the cat again, and dig the hole deeper. Which is very strange; and he tells me that he do believe that he hath killed above 100 cats."—Vol. i., p. 219.

Perhaps in the present day the matter-of-fact Society for the Prevention of Cruelty to Animals would have had something to say to Dr. Williams.

On May 23rd, 1661:—"At table I had very good discourse with Mr. Ashmole, wherein he did assure me that frogs and many insects do often fall from the sky ready formed."—Vol. i., p. 202.

It is difficult to say whose credulity is here most to be admired, that of Samuel Pepys or Mr. Ashmole, who, better known as an antiquary and hereafter as founder of the Museum at Oxford bearing his name, had probably strayed away from the strict line of his usual studies.

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* Pepys became a Fellow of the Royal Society in 1665, soon after it had received its charter from Charles II.

It is more to the purpose to read, under the same date:—

> "To the Rhenish wine-house,* and there Mr. Jonas Moore,† the mathematician, to us, and there he did by discourse make us fully believe that England and France were once the same continent, by very good arguments, and spoke very many things not so much to prove the Scripture false, as that the time therein is not well computed nor understood."—Vol. i., p. 235.

On the 13th January, 1661-2, Pepys would seem to have made acquaintance with what is known as "Rupert's Drops,"‡ the mode of fracture of which is nearly identical with the newly-discovered toughened glass of the present day:—"Mr. Peter did show us the experiment (which I had heard talke of) of the chymicall glasses which break all to dust by breaking off a little small end; which is a great mystery to me."

An astounding fact in Natural History is disclosed in an entry under date February 4th, 1661-2. It is to be feared that Mr. Templer (supposed to have been a clergyman, too) was given to travellers' tales:—

> "At noon to my Lord Crewe's, where one Mr. Templer (an ingenious man and a person of honour he seems to be) dined; and discoursing of the nature of serpents, he told us some in the waste places in Lancashire do grow to a great bigness, and do feed upon larkes, which they take thus:—They observe when the lark is soared to the highest, and do crawl till they come to be just underneath them; and there they place themselves with their mouth uppermost, and there, as is conceived, they do eject poyson upon the bird; for the bird do suddenly come down again in its course of a circle, and falls directly into the mouth of the serpent; which is very strange. He is a great traveller; and speaking of the tarantula, he says that all the harvest long (about which times they are most busy) there are fidlers go up and down the fields every where in expectation of being hired by those that are stung."—Vol. i., p. 244.

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* This was in Crooked Lane.

† Mr. Jonas Moore (known as one of the most eminent mathematicians of his day, knighted by Charles II., and who died in 1679) was clearly much in advance of his time.

‡ "Rupert's drops" was the name given to a philosophical toy brought to England by Prince Rupert. These are small tadpole-shaped pieces of glass which have been formed by allowing fused glass to drop into water. A blow may be given with impunity to the head of the glass tadpole; but the mere breaking off of the tail causes the whole to fly to dust with a sharp explosion. ('Encyclopædia Britannica,' article "Annealing.")

Of the mode of capture of larks by serpents here so circumstantially described, or of the existence of the serpents themselves which "do grow to a great bigness," it is unsatisfactory to have to state that no record can be found in Baines' exhaustive 'History of the County Palatine and Duchy,' or indeed elsewhere.

Describing the entry into London of the Russian Ambassador (November 27th, 1662), Pepys says:—

> "I could not see the Embassador in his coach; but his attendants in their habits and fur caps very handsome, comely men, and most of them with hawkes upon their fists to present to the King. But, Lord! to see the absurd nature of Englishmen, that cannot forbear laughing and jeering at every thing that looks strange."—Vol. i., p. 343.

Subsequently (on December 29th) Pepys, detailing the ceremonies attendant upon the Ambassador waiting upon the King (Charles II.) and offering the presents he had brought his Majesty, including the hawks before mentioned, adds:—"The King took two or three hawkes upon his fist, having a glove on wrought with gold, given him for the purpose."

We now reach a period in Pepys' career when he becomes more identified with scientific pursuits than the extracts from his 'Diary' already given would warrant the reader entertaining any idea of. In 1664-5 he was elected a Fellow of the Royal Society, a body of which he was destined eventually (in 1684) to become the seventh President. The Royal Society had its origin about the year 1645, in an agreement between some of the most learned men of the day to meet weekly at Gresham College to discourse upon subjects connected with mathematics and natural philosophy. These meetings, owing to the political exigencies of the times, falling into desuetude, were revived in 1660, Gresham College becoming thus the cradle of a Society destined soon to make a considerable name in the scientific world—a name the renown of which has been maintained to the present day. Receiving its first charter from Charles II. in July, 1662, in February, 1664-5, Pepys was elected a Fellow, and he thus refers to the incident on the 15th of that month:—

> "With Creed to Gresham College, where I had been by Mr. Povy the last week proposed to be admitted a member, and was this day admitted, by signing a book and being taken by the hand by the President, my Lord Brouncker, and some words of admittance said to me. But it is a most acceptable thing to hear their discourse, and see their experiments: which

were this day on Fire, and how it goes out in a place where the ayre is not free, and sooner out where the air is exhausted, which they showed by an engine on purpose."—Vol. ii., p. 248.

On March 1st he seems to have paid his admission money, forty shillings, to the Society. On January 9th, just previous to his election, Pepys was present at a meeting at Gresham College, and—

> "Saw the Royal Society bring their new book, wherein is nobly writ their charter and laws, and comes to be signed by the Duke* as a Fellow; and all the Fellows' hands are to be entered there and lie as a monument; and the King hath put his with the word Founder."—Vol. ii., p. 238.

In what spirit the merry monarch thus inscribed his royal autograph in the Fellows' book may be well guessed, for in Pepys' pages do we not read (February 1st, 1663-4) how his Majesty "mightily laughed at Gresham College for spending time only in weighing of air and doing nothing else"? It is perhaps only fair, however, to add here that Bishop Sprat, in his History of the Society, says the King evinced "much satisfaction that this enterprise was begun in his reign," and in various ways displayed interest in the success of the Society thus happily inaugurated. The "new book" is still in use, containing the autograph of every Fellow from the institution of the Society to the present day.

We now from time to time come upon entries in the 'Diary' referring to papers read before, and the proceedings generally of, the Society, at whose meetings Pepys evidently had become a frequent and zealous attendant. On March 1st, 1664-5, we read:—

> "To Gresham College, where Mr. Hooke read a second very curious lecture about the late comet; among other things proving very probably that this is the very same comet that appeared before in the year 1618, and that in such a time probably it will appear again, which is a very new opinion; but all will be in print."—Vol. ii., p. 253.

The 'Philosophical Transactions,' by which name the published proceedings of the Royal Society are known, commence on the 6th March, 1664-5, and continue to the present day. By their means the papers and other matters spoken of by Pepys may be traced with tolerable readiness. The "late comet" referred to was the subject of several papers, and will be found described in Mr. Russell Hind's exhaustive little treatise on those bodies.

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* The Duke of York.

The Great Plague of London occurred in 1664, and put an end to all social and other assemblages during its continuance. To his honour be it told that when the metropolis was well-nigh abandoned owing to this scourge, Pepys remained at his post, observing in a letter to Sir William Coventry, "The sickness in general thickens around us. You, sir, took your turn at the sword; I must not, therefore, grudge to take mine at the pestilence."*

On January 22nd, 1665-6, was held—

> "The first meeting of Gresham College since the Plague. What among other fine discourse pleased me most, was Sir G. Ent† about Respiration; that it is not to this day known, or concluded on among physicians, nor to be done either, how the action is managed by Nature, or for what use it is."—Vol. ii., p. 357.

Nothing appears, at this date, on the subject of the discourse here alluded to, or in regard to the following, in the 'Philosophical Transactions': they may consequently have been papers read before the College, and not before the Royal Society:—

> Feb. 21, 1665-6. "With my Lord Brouncker to Gresham College, the first time after the sickness that I was there, and the second time any met. And here a good lecture of Mr. Hooke's about the trade of felt-making, very pretty."—Vol. ii., p. 367.

Pepys associates now with men of scientific character, and with them holds much "sweet converse." On August 8th, 1666, he—

> "Discoursed with Mr. Hooke about the nature of sounds, and he did make me understand the nature of musicall sounds made by strings, mighty prettily: and told me that having come to a certain number of vibrations proper to make any tone, he is able to tell how many strokes a fly makes with her wings (those flies that hum in their flying) by the note that it answers to in musique, during their flying. That, I suppose, is a little too much refined; but his discourse in general of sound was mighty fine."—Vol. iii., p. 3.

We wonder what Prof. Tyndall or Lord Rayleigh would have to say to these conclusions. The next "experiment," if made at the present time, would assuredly have subjected all concerned to much objurgation at the hands of the Anti-Vivisection clique. If the operation termed "transfusion of blood" is but little resorted to now-a-days, and has not altogether fulfilled the expectations once entertained of it, the record of the earlier experiments in connection with it has not the less interest. On November 11th, 1666, Pepys narrates:—

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* Weld, 'History of the Royal Society,' vol. i., p. 296.

† Sir George Ent, F.R.S., was President of the College of Physicians.

"Dr. Croone told me, that at the meeting at Gresham College to-night thure was a pretty experiment of the blood of one dog let out (till he died) into the body of another on one side, while all his own run out on the other side. The first died upon the place, and the other very well and likely to do well. This did give occasion to many pretty wishes, as of the blood of a Quaker to be let into an Archbishop, and such like; but as Dr. Croone says, may if it takes, be of mighty use to man's health, for the amending of bad blood by borrowing from a better body."—Vol. iii., p. 85.

On November 16th the result of the experiment is given:—

"This noon I met with Mr. Hooke, and he tells me the dog which was filled with another dog's blood at the College the other day is very well and likely to be so as ever, and doubts not it being found of great use to men; and so do Dr. Whistler, who dined with us at the tavern."—Vol. iii., p. 87.

What would Mr. John Bright or Archbishops Tait and Thomson say to Mr. Pepys' thoughtless witticism, which is eminently Palmerstonian in its flavour? The 'Philosophical Transactions,' in giving the details of the "experiment," state that though "hitherto look'd upon to be of an almost unsurmountable difficulty, it hath been of late very successfully perform'd, not onely at Oxford by the directions of that expert anatomist, Dr. Lower, but also in London, by order of the R. Society, at their publick meeting in Gresham Colledge."

The Society soon grew bolder, for the following year found them extending the experiment of transfusion from dogs to mankind. Again let Mr. Pepys be the exponent. On November 21st, 1667, he went—

"With Creed to a tavern, where Dr. Wilkins and others; and good discourse; among the rest, of a man that is a little frantic, that is poor and a debauched man, that the College have hired for 20*s*. to have some of the blood of a sheep let into his body; and it is to be done on Saturday next. They purpose to let in about 12 oz.; which they compute is what will be let in in a minute's time by a watch."—Vol. iii., p. 416.

On November 30th we learn the result, so far, at least as concerns the man "that is a little frantic"; but how about the sheep? Pepys says—

"I was pleased to see the person who had his blood taken out. He speaks well, and did this day give the Society a relation thereof in Latin, saying that he finds himself much better since and as a new man; but he is cracked a little in his head, tho' he speaks very reasonably and well. He had but 20*s.* for his suffering it, and is to have the same again tried upon him: the first sound man that ever had it tried on him in England, and but one that we hear of in France."—Vol. iii., p. 420.

The 'Philosophical Transactions' furnish the details of the experiment, stating that it "was perform'd November 23rd, 1667, upon one Mr. Arthur Coga, at Arundel-House, in the presence of many considerable and intelligent persons, by the management of those two Learned Physitians and dextrous Anatomists, Dr. Richard Lower and Dr. Edmund King."

Pepys could not allow the occasion to slip without recording another sample of his treatment of all things, grave or gay:—

"On this occasion Dr. Whistler told a pretty story of Dr. Cayus that built Caius College; that being very old and living only at that time upon woman's milk, he while he fed upon the milk of an angry fretful woman was so himself; and then being advised to take it of a good natured patient woman, he did become so beyond the common temper of his age."—Vol. iii., p. 417.

Coming events were casting their shadows before, for we now read, November 30th, 1667:—

"To Arundel House, to the election of officers for the next year; when I was near being chosen of the Council, but am glad I was not, for I could not have attended, though above all things I could wish it; and do take it as a mighty respect to have been named there."—Vol. iv., p. 278.

Shortly after this, however, he was elected into the Council, on which he often served, and in 1684 was chosen President, and filled the office for two years.*

Pepys' increasing importance was not without its disadvantages. We have read already how forty shillings sufficed to secure his admission to the Society, in whose welfare and advancement he thencefrom took so considerable an interest. It is not without wincing, nevertheless, that he records the following (April 2nd, 1668):—

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* A curious usage is referred to on this head (November 20th, 1668):—"Mr. Povy, Creed and I, to Arundell House, and there I did see them choosing their Council, it being St. Andrew's-day; and I had his cross set on my hat, as the rest had, and cest me 2*s*." The annual meeting of the Royal Society is still held on that day, as indeed is prescribed by the first Charter. Weld, in his 'History of the Royal Society,' says St. Andrew was "the patron saint of the Society, in whose honour the Fellows of the Society were accustomed, at the early anniversary meetings, to wear a St. Andrew's cross in their hats."

"With Lord Brouncker to the Royall Society, where they had just done; but there I was forced to subscribe to the building of a College, and did give £40; and several others did subscribe, some greater and some less sums; but several I saw hang off; and I doubt it will spoil the Society, for it breeds faction and ill will, and becomes burdensome to some that cannot, or would not, do it. Here, to my great content, I did try the use of the Otacoustion,* which was only a great glass bottle broke at the bottom, putting the neck to my eare, and there I did plainly hear the dancing of the oares of the boats in the Thames to Arundel gallery window, which without it I could not in the least do, and may, I believe, be improved to a great height, which I am mighty glad of."—Vol. iv., p. 409.

As regards the proposed College, for the building of which in Arundel Gardens Sir Christopher Wren contributed a design, it may as well be stated that in consequence of legal difficulties, and still more of a want of funds, it was never built.† Mr. Pepys consequently, let us hope, saved his money.

Our jottings from the 'Diary' must now perforce come to an end, for though Pepys' notes continue to be made for a couple of years more,—when the failure of his eyesight, already so touchingly referred to, compelled his forbearance,—there is little or nothing to claim attention in the special direction dealt with in this paper. With the following graphic account of the visit paid by a great lady of the period to a meeting of the Royal Society, and of the honourable reception there accorded her (under date May 30, 1667), this selection of Pepysiana may be fitly brought to a close:—

"After dinner I walked to Arundell House, the way very dusty; where I find very much company, in expectation of the Duchesse of Newcastle, who had desired to be invited to the Society; and was; after much debate *pro* and *con*, it seems many being against it; and we do believe the town will be full of ballads of it. Anon comes the Duchesse with her women attending her; among others the Ferabosco, of whom so much talk is that her lady would bid her show her face and kill the gallants. She is indeed black, and hath good black little eyes, but otherwise a very ordinary woman I do think, but they say sings well. The Duchesse hath been a good comely woman; but her dress so antick, and her deportment so ordinary, that I do not like her at all, nor did I hear her say anything that was worth hearing, but that she was full of admiration, all admiration. Several fine experiments were shown her of colours, loadstones, microscopes, and of liquors; among others, of one that did while she was there turn a piece of roasted mutton into pure blood, which was very rare. After they had shown her many experiments, and she cried still she was full of admiration, she departed, being led out and in by several Lords that were there; among others, Lord George Barkeley and Earl of Carlisle, and a very pretty young man, the Duke of Somerset."—Vol. iii., p. 229.

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* An instrument to facilitate hearing. No allusion to this can be found in the 'Philosophical Transactions.'

† Weld, 'History of the Royal Society,' vol. i., pp. 211—214.

John Evelyn, in his Diary,* thus alludes to this visit:—

"To London to wait on the Duchess of Newcastle (who was a mighty pretender of learning, poetrie, and philosophie, and had in both publish'd divers bookes) to the Royal Society, whither she came in greate pomp, and being receiv'd by our Lord President at the dore of our meeting roome, the mace, &c., carried before him, had several experiments showed to her. I conducted her Grace to her coach, and return'd home."

Some account of this remarkable woman, of whom so little is now known, may not be unacceptable. Margaret, the second wife of William Cavendish, first Duke of Newcastle (one of the most able generals and distinguished patriots of the times of Charles I. and II.), was born about the end of the reign of James I., married the Duke (then Marquis) of Newcastle in 1645, and died in 1673. Walpole† furnishes a notice of the Duchess' numerous works, which he states "fill many folios"; and Granger‡ says, "If her merit as an author were to be estimated from the quantity of her works, she would have the precedence of all female writers ancient or modern. There are no less than thirteen folios of her writing, ten of which are in print: they consist chiefly of poems and plays." Dr. Birch§ gives us a list of the "fine experiments" provided for the Duchess' delectation:—

"The Duchess of Newcastle coming in, the experiments appointed for her entertainment were made:—First, that of weighing the air, which was done with a glass receiver of the capacity of nine gallons and three pints, which being exhausted and put into a scale and then opened and the air let in weighed thereupon one ounce and seventy-one carats more than it did when exhausted. Next were made several experiments of mixing colours. Then two cold liquors by mixture made hot. Then the experiment of making water bubble up in the rarefying engine by drawing out the air.

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* 'Memoirs,' vol. i., p. 404.

† 'Royal and Noble Authors,' vol. iii., p. 145.

‡ 'Biographical History of England,' vol. v., p. 263.

§ 'History of the Royal Society,' vol. ii., p. 177.

And that of making an empty bladder swell in the same engine. Then the experiment of making a body swim in the middle of the water. And that of two well-wrought marbles which were not separated but by the weight of forty-seven pounds."

No mention being made here of the "one which did while she was there turn a piece of roasted mutton into pure blood," we are left to conjecture entirely as to the nature of this experiment, which Pepys correctly designated as "very rare."

The frequent references in the 'Diary' to Pepys' visits to taverns invites attention to the probable origin of the Royal Society Club being traceable to these social assemblages held usually after the meetings of the Society had broken up. For example, under date February 15th, 1664-5:—

> "After this being done, they to the Crown Tavern behind the 'Change, and there my Lord* and most of the company to a club supper. Sir P. Neale, Sir R. Murrey, Dr. Clerke, Dr. Whistler, Dr. Goddard, and others, of the most eminent worth. Above all, Mr. Boyle was at the meeting, and above him Mr. Hooke, who is the most, and promises the least, of any man in the world that ever I saw. Here excellent discourse till ten at night, and then home."—Vol. ii., p. 248.

And again (June 4th, 1666), "To the Crown, behind the 'Change, and there supped at the Club with my Lord Brouncker, Sir G. Ent, and others of Gresham College."

Weld* says the Royal Society Club was founded in 1743, under the designation of the "Club of the Royal Philosophers," and bases this statement, apparently, on the fact of the original "Rules and Orders to be observed by the Thursday's Club called the Royal Philosophers" bearing date October 27th, 1743.

The late Admiral William Henry Smyth, however, in his amusing 'Sketch of the Rise and Progress of the Royal Society Club,' privately printed in 1860, observes (p. 10):—"Though the commencement of the oldest minute-book which has descended to us is assumed as the date of establishment, it would appear, both from circumstance and tradition, that the Club was certainly in existence before the year 1743." This supposition of the gallant Admiral is abundantly borne out by the 'Diary,' which proves, indeed, that the existence of the "Club" was about coincident with the establishment of the "Society."

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* Lord Brouncker.

† 'Hist. Royal Soc., vol. i., p. 491.

NOTES FROM AN ARCTIC JOURNAL.

By H. W. Feilden, F.G.S., C.M.Z.S.

(Continued from p. 320.)

On anchoring in the harbour of Godhavn (called Lievely by the English whalers) we found that H.M.S. 'Valorous' had preceded us; and shortly afterwards our consort, the 'Discovery,' came in, and anchored alongside. The following week was occupied in transferring supplies from the 'Valorous' to the two ships forming the Expedition; and the opportunity afforded by this delay of making myself acquainted with the neighbourhood was utilised as much as circumstances permitted.

The district of Godhavn comprises the southern and western shores of Disco Island and the Kronprins Island (Whalefish Island), in Disco Bay. In 1870 the number of inhabitants was two hundred and forty-five, of whom one hundred and thirteen belong to the settlement of Godhavn, which is built upon a low, ice-polished peninsula of gneiss, and forms the eastern side of the excellent harbour. It is the residence of the inspector of the northern districts of Danish Greenland, and, owing to the accessibility of the port, has been a favourite rendezvous of Arctic Expeditions. Some of the Scotch whaling-fleet, proceeding to the Lancaster Sound fishery, annually make a point of calling at Godhavn on the way north; so that in addition to the two mails forwarded by the regular trading brigs from Copenhagen, the Danish officials at Godhavn receive an extra budget of news by the Dundee steam-whalers. It was very gratifying to find that Mr. Krärup Smith, the intelligent inspector of North Greenland, took great interest in the Natural History of his extensive domain. Though overburdened by the duties of his office, and the immense amount of extra labour thrown on him by the arrival of our Expedition, he arranged a visit for us to the cliffs of Uifvak, and with great generosity allowed me to select a very considerable portion of his archæological collection, which on our return to England was deposited in the British Museum.

The Danish residents in the Greenland settlements live in good wooden houses, the timber of which they are built having been brought from Europe. The houses of the natives at Godhavn are considerably modified from the original type of native "igloo;"

instead of being mere huts of stone and earth, approached by a subterranean passage, many have wooden fronts, glass windows, and excellent sleeping accommodation inside. I was much pleased with the general cleanliness and hospitality of the Greenlanders. The great admixture of European blood amongst the inhabitants of Godhavn at once attracts attention; I was struck to see light-haired, blue-eyed boys, of thoroughly Danish expression, paddling in the native kajaks, and dressed after the manner of the country, and talking the Eskimo language. These are the progeny or descendants of the Danish *employés* who have married Greenland women. Some of the young unmarried women were, I thought, remarkably pretty, and their dress extremely becoming. The married women, engrossed with household cares, as a rule, soon lose all interest in their dress, and become slovenly and careworn: they soon age and get wrinkled. The fashion of wearing the hair tightly drawn together in a top-knot is very injurious; it causes the hair to fall off in patches on the side of the head, and the expression of the face is altered. The Greenlanders are strictly moral, and their behaviour bears favourable comparison with far more favoured races. Syphilis was unknown in Greenland, until introduced of late years into the district of Frederikshaab, following the increased intercourse with foreigners, consequent on the working of the cryolite mine at Ivigtut.

On the opposite side of the harbour to the settlement of Godhavn a very accessible valley, called the Lyngmarken, leads the traveller up to the base of the basalt precipices, which there rest upon the gneiss; a more difficult path from thence conducts a person to the highlands of Disco Island. Accompanied by a friend we made the ascent one morning. The entire valley of the Lyngmarken being bare of snow, we walked through a copse of willow reaching above our knees. Lapland and Snow Buntings, with a single Ptarmigan, *Lagopus rupestris*, were the only birds we met with. The alpine plants were blooming in all their freshness; it was curious to notice that the blossoming of these plants appeared to keep pace with the retreat of the snow, and just as soon as the snow dissolved the flowers appeared. When we reached the junction of the gneiss and trap beds we took advantage of a torrent-course to aid our ascent. At an elevation of about 1000 feet the mountain torrent commences to cut out a vast *cirque* in the soft traps. The mountain side has been scooped out into an amphitheatre, with perpendicular walls, at least four hundred feet in height. The bottom of the *cirque* was filled with snow, under which the cascade disappeared. Passing above the *cirque* and keeping to the left bank of the stream we gained the highland without much difficulty, our aneroids giving an elevation of 2400 feet; the view looking eastward over the settlement of Godhavn was remarkably beautiful, islands in Disco Bay, though fourteen miles distant, seemed to be directly beneath us; the opposite shores of Greenland were distinctly visible, the great Jakobshavn glacier shone out under the brilliant sunshine, whilst a vast number of icebergs were scattered over Disco Bay. A little beyond this spot we crossed the snow-line, losing sight of the sea. The snow was very soft, and we sunk over our knees: an unbroken line of snow seemed to stretch with a gradual rise into the interior; whether we were walking over a glacier or not, we could not determine, from the depth of the snow. After struggling on for two hours our aneroids gave an elevation of 2600 feet. We then retraced our steps. After reaching the snow-line no trace of animal life was observed, except the foot-prints of a hare.

An excursion made to Uifvak, being our first introduction to camp- and boat-life in Greenland, and moreover having given us an opportunity of observing the more common birds of the sea-coast around Disco, may perhaps not be out of place. Leaving Godhavn in a whale-boat we stopped at Fortune Bay harbour, some four miles to the westward, and prepared supper. The islets which form Fortune Bay consist of rounded masses of gneiss, the result of ice-action: the tops of the islets in some places are distinctly furrowed; the little valleys lying between the polished knolls are choked with rounded boulders, now moss and lichen covered. Veins of syenite in some places traverse the gneiss. Traces of old dwellings, marked by the fertility and rich green of the turf, are to be found in sheltered nooks. Hundreds of "dovekies," or Black Guillemots, were swimming round the shores; we shot several for our supper, and obtained more than a dozen of their fresh eggs from chinks in the rocks. A Lapland Bunting was found nesting, and a Snow Bunting had young nearly ready to fly. After pulling at the oars all through the night we reached Uivfak, distant some twenty miles from Godhavn. Landing there is somewhat difficult in fine weather, and when there is any swell on quite out of the question.

Where we reached the shore, the horizontal bedded basalt cliffs rose frowning overhead to a height of a thousand feet; they are much serrated on their upper edge by the action of water and weather, and though, when viewed from a distance, the cliffs appear to be mural, on a closer acquaintance it is seen that they are fretted into most fantastic shapes; pillars, needles, and blocks of trap stand out in relief against the cliffs. A talus with a very steep slope extends from the beach to a height of about three hundred feet. This talus is removed between low- and high-water marks by the sea; but on this cleared space many large ice-transported erratics were strewn. The two Greenlanders who accompanied us, one of whom had informed Mr. Kräarup Smith that in the preceding year he had observed an "iron-stone" similar in appearance to those taken away by the Swedes, led me to the spot: the waves were breaking somewhat; but I satisfied myself that no iron-masses were lying amongst the boulders for some yards to seaward.* Considerable interest has been excited both in England and the Continent as to the origin of these iron-masses of Uivfak, whether they be meteoric or telluric. Without presuming to hazard any decided opinion on the subject, it may be well to mention that, even with an ordinary lens pieces of basalt, apparently similar to the rock of Uivfak, are to be detected in the body of these lumps of iron: this militates against the argument of their meteoric origin. The re-occurrence of pieces of iron-stone at the same place makes it more than probable that the matrix of the iron is in the cliffs overhead.

On our return journey to Godhavn we landed at Laxebught, where there is a considerable indentation on the coast. Between the cliffs and the bay stretches an extent of flat land, which reaches to the head of the bay. The present sea-level is some twenty feet below this border of old sea-shore. A considerable stream, formed by the melting of the snow on the uplands, empties into Laxebught, near its western extremity; rounded boulders of gneiss are abundant in the bed of the stream. As boulders of gneiss are likewise scattered over the flat land surrounding the bay, and were probably floated there on ice when the land lay below the present sea-level, I walked up to the spot where the torrent debouches from the cliffs, and convinced myself that in any case a good deal of the gneiss was washed down from the interior; therefore this torrent must either cut down to a formation of gneiss, or else the snow-covered uplands of Disco Island are strewn over with ice-transported blocks, that during the summer thaws work down into the stream. Our return track led us amidst a great number of bergs: some of these ice-islands were over a hundred feet above water, and as they were frequently "calving" we kept at a respectful distance from them. The first notice given of disruption was seeing the flocks of sea-gulls that had been resting on the iceberg rise hurriedly in the air; then a mass of ice slid into the sea, making a great turmoil in the waters, followed by a loud report. The newly exposed portion of the berg was at once enveloped in mist, owing to its being so much colder than the air with which it suddenly came in contact. If the detached mass of ice is of sufficient size to upset the equilibrium of the berg the sight is still grander: the enormous mass slowly moves; the side that is rising pours from off its flanks volumes of water that descend in enormous cataracts of foam. This movement of the iceberg back and forwards is slow, but exceedingly grand; the oscillations of the enormous mass continuing for half an hour before the berg attains its new position of poise and rest in the sea.

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* In the following year, 1876, Mr. Krärup Smith obtained a large mass of native iron from this same spot, and several smaller pieces: they were picked up at the water's edge.

During this excursion I noticed the following species of birds: —*Plectrophanes lapponicus*, breeding at Fortune Bay; *P. nivalis*, common, and breeding wherever we landed; a single pair of *Corvus corax*, in the cliffs of Laxebught; *Larus glaucus*, common, also breeding in the cliffs near Laxebught, the spot being called "Nargavak," after the Greenlandic name of the bird, which word gives a very faithful representation of its note; *L. leucopterus*, common; a few pairs of *Stercorarius crepidatus; Fulmarus glacialis*, very abundant: the natives give the name of "Igarsok" to the dark-coloured birds, which I was informed by Mr. Fencker, of Godhavn, means cook, that functionary on board the Danish trade-vessels usually dressing in a blue jersey, whence the derivation of the name. *Uria grylle* was very abundant: amongst hundreds that I saw in the vicinity of Fortune Bay was one completely black, the white spot on the scapulars not showing. *Alca brunnichi* abundant; but *A. torda* scarce in comparison. Small flocks of *Harelda glacialis* were met with, and some numbers of *Somateria mollissima*, the most numerous duck being *S. spectabilis*;

all the eiders shot on this trip belonged to this species. They usually flew in flocks, in a course parallel with the coast. The six or eight examples we procured were males. I observed one flock containing more than fifty individuals; the bright-coloured males predominated, and the remainder were in all probability immature birds of the same sex. Mr. Fencker assured me that none of this species nested in the vicinity of Godhavn, some small islands in Disco Fiord being the nearest breeding place with which he was acquainted. The natives do not discriminate between the females of the two species of Eider Ducks, consequently well-authenticated eggs of the King Eider are difficult to procure from Greenland. On a small lake, not far from Godhavn, a few Red-necked Phalaropes were breeding. This list about exhausts the number of species of birds that I observed at the island of Disco.

Englishman's Bay, just beyond the harbour of Godhavn, is an excellent locality for the plant-collector. We visited that spot on several occasions: a bed of *Mertensia maritima* in full bloom, growing on the beach, was very attractive; *Archangelica officinalis* grew there abundantly; at the roots of a fern a small snail, *Vitrina angelica* var. *pellucida*, was rather common. The only drawbacks to our enjoyment on shore were the attacks of mosquitoes, large striped insects, which alighted on one without any humming or note of warning.

At Godhavn we obtained some twenty-four dogs for sledging purposes. The dog of the Eskimos is undoubtedly a semi-domesticated wolf;* and in all probability accompanied that people from America in their migration to Greenland. In the Danish settlements some of these animals show traces of having been crossed with Newfoundland or Labrador dogs; but the genuine wolf-type largely predominates. As I was destined in the future to become better acquainted with these valuable assistants, when toiling along with them over the rugged floes of the far north, I shall defer giving an account of them until a later period of the voyage.

On July 15th we left Godhavn, and proceeded to the settlement of Ritenbenk, likewise the name of the district which occupies both sides of the Waigatt Strait. The settlement of Ritenbenk contains a population of about one hundred souls. On our passage to this port we passed close to a superb iceberg: it had a lofty arch piercing its very centre, through which shone the warm colours of the midnight sun. This iceberg, at least two hundred feet out of the water, was streaked with saphirine-blue, and close to the water's edge with vivid green; hundreds of Fulmars, and many Arctic Terns, were perched on it. As the 'Valorous,' following us, showed through the crystal arch the effect was magnificent. On shore at Ritenbenk we found young Wheatears, Lapland Buntings, and Snow Buntings, able to fly; the young Ptarmigans, *L. rupestris*, were following their parents. The crops of these newly-hatched birds contained blossoms of *Vaccinium uliginosum*, and the young buds of *Cassiope tetragona*.

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* Dr. Robert Brown considers the progenitor of the Arctic Dog to have been *Canis occidentalis* var. *griseo-alba* (Proc. Zool. Soc., May, 1868).

A party from our ships visited a breeding place of sea-fowl, on Arveprins Island, for the purpose of obtaining a supply of fresh meat: a large number of *Alca brunnichi* and *A. torda*, a Glaucus Gull, two Kittiwakes, two King Eiders, and a common Eider, were brought back by the gunners. A young Cormorant, *Phalacrocorax carbo*, with only one wing developed, was taken from its nest: the head of the humerus was rounded, and there was an entire absence of radius and ulna; the bird was nearly as large as an adult, and well nourished; its stomach contained four ounces of gneiss pebbles. One of the Razorbills had its hatching-spot on the side under the wing, and not on the belly, as usual: this bird during incubation must have lain on its side.

On Arveprins Island we came on a deserted burial ground: the tombs, some twenty in number, had been originally built with blocks of gneiss, covered over with slabs of the same material; all had fallen down. These tombs had been raised over the corpse, the rocky nature of the ground having prevented the digging of a grave. The few fragments of human bones left lay on the surface of the rock: no implements of any kind were to be found.

At Ritenbenk we parted company with the 'Valorous,' and said good-bye with regret to our kind friends. During my stay at Godhavn I had the opportunity of sharing in some dredging operations, under the guidance of Dr. Gwyn Jeffreys, who, to complete his personal acquaintance with the fauna of the northern seas, had undertaken the long and trying voyage to Greenland, on board the 'Valorous.'* Here, also, we had to say adieu to

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* The biological results of this cruise, by Dr. J. Gwyn Jeffreys, F.R.S., are published in the Proc. Roy. Soc., 1876.

Mr. Clements Markham, who had accompanied the Expedition thus far on board the 'Alert.' It was no ordinary leave-taking, for to Mr. Markham's earnest advocacy of a renewal of Arctic enterprise the despatch of the Expedition was in a great measure due. An Arctic traveller himself, having graduated in the school of the Franklin Search Expeditions twenty-five years before, he added practical experience to his vast stores of knowledge, which were at all times available for the information and benefit of his companions. Our parting with one who sympathised so warmly in all our hopes and aspirations was severing the last link in the chain that connected us with home.

On July 17th we passed down the Waigatt Strait, through streams of bergs discharged from the Torsukatak ice-fiord. The scenery of the Waigatt is very fine; on the Nugsuak side the trap-cliffs rise to a height of from 3000 to 4000 feet. The same formation forms the coast-line as far as Proven, in lat. 72° 22′ N., which we reached on the night of the 19th. This settlement is built on a small island composed of gneiss, its highest point reaching an elevation of about 600 feet. The surface of the island is strewed over with erratic blocks, chiefly metamorphic; some of them are of enormous size, and are poised on very insecure foundations, many of them giving the idea that they would topple over with but little encouragement. On the extreme summit of the island are lying several masses of basalt, with the edges of the columns little worn by attrition; in all probability these blocks were drifted to their present position by the agency of floating ice, in which case this portion of the Greenlandic coast must have experienced great elevation since the deposition of the Miocene traps and basalts. At an elevation of over 1000 feet on Arveprins Island, Mr. Markham and I observed the same deposition of basaltic erratics on its ice-worn slopes. We noticed a considerable falling off in the abundance of the flora at Proven in comparison with the Island of Disco; bird-life was very scant—a single Raven, many family parties of Snow Buntings, a few Wheatears with their newly-fledged young, and a Glaucous Gull, made up the list. The sea, however, was more prolific in life: a small dredge, let down in thirteen and a half fathoms, brought up many Mollusca, Star-fishes, and Crustaceans. By dipping buckets, we captured hundreds of *Clio borealis* and *Limacina arctica;* when the two species were placed in the same vessel the *Clios* eagerly devoured the *Limacina.* I noticed, on Proven Island, that a perpendicular exposed surface of gneiss rock was studded with globular cavities, varying in size from an apple to circular holes one or two feet in diameter: if ever they had contained any substance it must have been of a softer consistency than the matrix, as the perforations opening into these holes did not equal the largest diameter of the cavities.

Leaving Proven on July 21st we sailed for Upernivik. The coast-line between these two points is magnificently grand; cliffs of 1000 to 1200 feet rising sheer from the water's edge,—a gorgeous colouring of rock and crag, backed by the inland snow, with glaciers showing from the inlets,—formed a scene of indescribable beauty. Early on the following morning we were abreast of Sanderson's Hope, the western face of the Island of Karsorsuak, which rears its mist-capped summit some 3500 feet above the level of the sea. The cliffs of Sanderson's Hope appear at a little distance to be perfectly smooth faces of rock, over 1000 feet in height; but on a nearer approach ledges can be traced across its front, on which were innumerable sea-fowl — these were the *Alca brunnichi,* or loom; and Sanderson's Hope is one of the most noted breeding places of this species on the coast of Greenland. Being desirous of obtaining a supply of birds the boats were put out, and a numerous party of eager gunners proceeded to the "loomery." There was a considerable swell on, which made it difficult to take correct aim; and after an hour's gunning only one hundred and twenty-two Guillemots rewarded our united exertions. Amongst the dead birds I did not find a single *A. torda;* nor did I recognise one of that species amongst the thousands upon thousands that flew above my head. The most northern range of the Razorbill, as far as I am aware, is Ritenbenk, where we found it, as already mentioned, breeding in considerable numbers. When we fired at the birds huddled together on the ledges, dozens of eggs were knocked into the sea as the owners took wing: these eggs contained young ready to hatch. Several pairs of Glaucous Gulls that were breeding high up on the cliffs remained on their nests calmly gazing on the havoc below, their mates every now and again swooping on the deserted ledges and carrying off an egg. With considerable trouble Captain Markham managed to land me on the cliffs, and bootless and coatless I crawled to some of the ledges of red gneiss, along which the eggs were deposited. The eggs of Brünnich's Guillemot show quite as much variation in colour as those of *Alca troile*, and are quite as beautiful. To get back into the boat, rising and falling with the heavy swell, and to preserve the eggs from destruction, was a more difficult feat than landing. Holding the red silk handkerchief which contained the plunder, firmly between my teeth, I jumped blindly into the arms of the sailors, who caught me as they would a bale of goods. As good luck would have it not one of the eggs was cracked. We dropped anchor in the harbour of Upernivik the same day. This settlement, situated in lat. 72° 48′ N., is placed upon a small island: the inhabitants number under a hundred souls. The governor and missionary live in comfortable wooden houses; and there is a small, but neat, church. The huts of the natives are inferior to those at Godhavn, and so is the general appearance of the natives. Upernivik is certainly a most dreary looking spot: facing the open sea it is directly exposed to its winds and fogs; in winter the sun is below the horizon for seventy-nine days; and yet we found the Danish governor and his amiable wife seemingly cheery and contented with their lot. Some of the Dundee whalers had called at Upernivik a month before our arrival, so that Governor Fliescher and his wife were not very far behind us in European news. On landing I walked to the top of the island, which was nearly bare of snow, and some four hundred feet in height; the surface of the rock on its extreme summit showed ice-scratchings; the entire island is strewed with erratic blocks. I observed a pair of *Ægialitis hiaticula*, and several Snow Buntings. The flora appeared very scanty in comparison with Disco, but *Ranunculus pygmæus* grew abundantly in swampy spots near the settlement, and the diminutive *Betula nana* reaches the top of the island. The natives stretch the seal-skins in front of their "igloos," and fasten them down by means of a great number of bone pegs, chiefly snapped off pieces of seal's ribs; then the women set to work with the scrapers, now made of iron and imported from Denmark, and remove the adherent blubber from the skin. The bone pegs are similar to those I have found in the coast-middens of the west of Scotland; and I have no doubt they had been used for the same purpose. I was much struck with the intelligence of two young children that followed us: when they saw that we were interested in insects and plants they led us to the most likely spots, and drew our attention to some freshwater Crustacea; for every object they appeared to have a proper name, which they repeated to us several times with considerable animation.

On the evening of July 22nd we left Upernivik. Steering northwards along the Greenland coast, during a dense fog, we grounded for a short time on the Island of Kangitok; this gave us an opportunity to land. Eider Duck's nests were very numerous on the island, but evidently they had been recently robbed, for I did not find one containing eggs. Others of our party were more fortunate, and killed females of both species from off the nests; but owing to their inability, at this period of the voyage, to recognise the difference between the females, the eggs were not satisfactorily identified,—rather to my regret, as well authenticated eggs of *Somateria spectabilis* are not common in collections.

In order to cross Melville Bay, the bugbear of Arctic voyagers in the days of sailing vessels, two courses are possible: one is to keep moving along the land-ice, and, in the event of the pack moving in shore and endangering the ship, cutting docks into the fixed ice, and thus obtaining shelter; the other, to strike boldly into the "Middle Ice," trusting to the winds and other favourable circumstances to open up navigable lanes of water. The latter plan was adopted by Captain Nares; and, aided by very propitious circumstances, thirty-four hours after entering the pack we had left the "Middle Ice" behind us, and emerged into the "North Water" of Baffin Bay. Though eminently successful in this instance, considerable risk is involved by attempting a passage through the "Middle Ice;" and the fate of M'Clintock and his companions, in the 'Fox,'—who, entrapped in Melville Bay, drifted to the southward with the floating ice,—will be remembered by many of my readers. Their dreary and dangerous imprisonment lasted from August till the end of April in the following year, during which time they drifted south nearly twelve degrees of latitude. Our passage, on the contrary, was marked by brilliant weather; the immense fields of apparently smooth ice stretched away on every side, showing no sign of motion; the intense white was only relieved by the lanes of water, which here and there separated the floes: it was indeed a perfect picture of calm and repose, almost unbroken by the appearance of birds or other animals. By midday of July 25th we had fairly cleared the pack, and were steering for the high land in the vicinity of Cape York. Myriads of Little Auks swarmed around us, busily employed fishing for *Entomostraca*, flocks of them diving just in time to avoid the ship's stem. These birds use their wings vigorously to propel themselves under water. It was observable that the individuals in a diving flock kept their relative distances and bearings under water with as much correctness as if on the wing, and all returned to the surface within a second of one another. During the breeding season the pouch-like enlargement of the cheeks gives them a singular appearance. The contents of the cheeks is a reddish coloured substance, which on closer examination is found to consist of immense numbers of minute Crustacea. The adaptation of the mouth in this species, as a receptacle for the food required for their young, does not appear to have attracted much attention among naturalists; and yet a little consideration would have shown that some such arrangement must be required. With fish-feeders, such as *Alca*, *Uria*, and *Fratercula*, no difficulty arises in transporting food to their young; but in the case of *Mergulus alle*, which I believe subsists entirely on minute Crustacea, the bill is manifestly incapable of conveying the requisite amount of food, especially as very often the breeding places of the Little Auk are found inland, at considerable distances from the sea. This bird does not appear to be possessed of great powers of flight, or capable of making head-way against a gale: this will account for its having often been picked up in an exhausted condition far inland. In autumn Little Auks were migrating southwards in immense numbers from Davis Strait: probably these flocks were bound for the Labrador and Newfoundland coasts, for I did not observe them later on during that voyage in the Atlantic to the eastward of the longitude of Cape Farewell.

The Cary Islands were reached on July 27th. As it was determined to land a depôt of provisions on the south-eastern island of the group, we had an opportunity for a run on shore. Eider Ducks, with their young, Little Auks, Dovekies, and a colony of Glaucous Gulls, which latter nested on a steep cliff, were all the species of birds met with. The ascent to the breeding place of these Gulls was somewhat difficult: the ledges were covered with the ordure and castings of the birds, and the remains of Little Auks. The old Gulls, numbering some twenty pairs, attacked me vigorously, their boldness and cries increasing when the ledge was reached, on which about a dozen young Gulls were running about. Seizing a couple of young birds by their necks I attempted to descend; but they were so vigorous, and used their feet and wings with such force, that it was necessary to let one go, to avoid the likelihood of losing my foothold. These voracious young birds vomited a quantity of half-digested remains of Little Auks, and cried piteously. In the young Glaucous Gull the iris is dark blue, gape pink; colour of the bill ashy grey, with horn-coloured tip; legs and feet livid flesh-colour. In the adult the iris is straw-colour; eyelid thick and fleshy, and a bright gamboge-yellow; bill gamboge-yellow; spot on lower mandible deep orange, inclining to vermilion; size of spot varying greatly amongst different examples, as does the size of bill. The feet of adults vary in colour from dull flesh to yellowish pink. Many egg-shells of *Uria grylle* were lying amongst the offal at the breeding place of the Gulls: these must have been originally deposited in exposed situations, otherwise the Gulls could not have secured them. The gneiss rock, of which the island is formed, was covered in many places with lichens of great luxuriance. Flowering plants were not numerous. I saw a few tufts of scurvy-grass, but it did not grow in sufficient quantities to gather for use. A considerable breeding place of Brünnich's Guillemot exists on the north-western island of the group; and in August, 1851, a party from H.M.S. 'Assistance' obtained there a bag of nine hundred looms, dovekies, and rotches. During this visit Mr. Clements Markham, then a midshipman in H.M.S. 'Assistance,' observed several ancient remains of Eskimo, consisting of stone huts, cachés, graves, and a fox-trap built of stones. The occupation of these islands by the Eskimo is a matter of considerable interest; for unless these ancient inhabitants used the "kayak" and "oomiak" it is difficult to imagine how they arrived there, the Cary Islands being situated at a considerable distance from land in the great Polynia, usually called the "North Water" of Baffin Bay, and which is probably never completely frozen over, even in the spring or winter. I observed traces of foxes on the south-eastern island; and that, taken in connection with the ancient fox-trap, noticed by Mr. Clements Markham, raises the question how those animals can possibly exist on small rocky islands through the long winter, during which time the migratory birds are absent. The Glaucous Gulls having selected their breeding place on the steepest cliff, doubtless arose from fear of depredations by foxes. The Cary Islands show traces of recent elevation, for, on the summit of the one we visited, rounded and drifted fragments of sandstone and other erratics are abundant.

(To be continued.)

PROVINCIAL NAMES OF BRITISH ANIMALS.

Ireland.—It may interest your readers to glance through the annexed list of names by which our familiar birds are known in Ireland:—

Peregrine Falcon.	*Blue Hawk.*
Kestrel.	*Windhover.*
Common Buzzard.	*Kite; Goshawk.*
Marsh Harrier.	*Kite; Brown Hawk.*
Short-eared Owl.	*Woodcock Owl.*
Water Ouzel.	*Dipper; Kingfisher; River Pie.*
Missel Thrush.	*Jay; Big Felt.*
Redwing.	*Felt.*
Fieldfare.	*Blue Felt.*
Ring Ouzel.	*Cowboy; Mountain Stare.*
Wheatear.	*Stoneychat.*
Stonechat.	*Blackcap.*
Willow Warbler.	*Sallypicker; Golden Wren.*
Chiffchaff.	*Sallypicker.*
Sedge Warbler.	*Irish Nightingale; Sallypicker.*
Great Tit.	*Blackcap; Oxeye.*
Blue Tit.	*Tomtit.*
Hedgesparrow.	*Reefonge* (?)
Hooded Crow.	*Scald Crow; Praheen Cark* (or "Hen Crow," from its plunder of eggs).
Greenfinch.	*Green Linnet.*
Corn Bunting.	*Bush Lark.*
Black-headed Bunting.	*Blackcap.*
Meadow Pipit.	*Titlark.*
Rock Pipit.	*Rock Lark.*
Creeper.	*Woodpecker.*
Ring Dove.	*Woodquest.*
Common Heron.	*Crane.*
Curlew.	*Whaup.*
Whimbrel.	*Maybird.*
Common Snipe.	*Heather-bleat.*
Redshank.	*Red-legged Snipe.*
Common Sandpiper.	*Sand Lark.*
Dunlin.	*Sea Snipe; Sea Lark.*
Turnstone.	*Sea Lark.*
Lapwing.	*Phillipene.*
Bald Coot.	*Black Diver.*
Brent Goose.	*Barnacle.*
Shieldrake.	*Burrow Duck.*
Pintail.	*Sea Pheasant; Ladybird.*
Widgeon.	*Whistler.*
Smew.	*White-nun; Magpie Diver.*
Red-throated Diver.	*Galrush.*
Common Guillemot.	*Murre.*
Great Northern Diver.	*Imber.*
Green Cormorant.	*Shag.*
Sandwich Tern.	*Big Skirr.*
Arctic and Common Terns.	*Skirr.*
Great Black-backed Gull.	*Parson Gull.*
Storm Petrel.	*Martensil.*

I have compiled this list from Mr. Watters' little work on the 'Birds of Ireland,' published in 1853, but long since out of print. My own observation leads me to believe that the names which it contains are still common in Ireland.—CHARLES W. BENSON (Rathmines School, Dublin).

Worcestershire.—The following are a few of the local names for birds in Worcestershire:—

Whitethroat.	*Hazeck.*
Hedgesparrow.	The same.
Flycatcher.	*Spait.*
Chaffinch.	*Pie-finch.*
Green Woodpecker.	*Stock-eikle.*
Long-tailed Tit.	*Hedge-mumruffin.*
Willow Warbler.	*Grass mumruffin.*
Whinchat.	*Furzechat.*

As I have not yet seen Worcestershire represented in the lists that have lately appeared in 'The Zoologist,' I venture to hope that my imperfect list may elicit a more complete one by way of correction.—W. H. Heaton (Meadow Croft, Reigate).

Norfolk: additional Local Names.—The Norfolk and Norwich Naturalists' Society have just published the fourth part of the second volume of their 'Transactions,' in which I find the following Norfolk names of birds, not included in my recently published list (pp. 287—290):—

Avocet. *Shoe-awl.*
Spotted Crake. *Quail.*
Tufted Duck. *Golden-eye; Arp.*
Teal. *Crick.*
Garganey. *Summer Crick.*
Female Goldeneye. *Little Rattlewing* (the name of "Rattlewing" only being applied to the male bird).
The different species of Merganser. *Sawyer.*

These names are contained in two letters written by the late Rev. S. Girdlestone, of Great Yarmouth, in 1824 and 1829?—J. H. Gurney (Northrepps Hall).

Oxfordshire: additional Local Names.—Since I last wrote to you on the subject of local names of animals in Oxfordshire (p. 291), I have been enabled, chiefly by a perusal of Beesley's 'History of Banbury,' published in 1841, to gain some more particulars. The work has a capital flora of the district, and a few pages on the fauna.

Polecat. *Fitchet* (Beesley).
Mole. *Want** (Beesley).
Common Shrew. *Hardy Mouse* (Beesley).
Field Vole (*A. agrestis*). *Short-tailed Mouse; Meadow Mouse.*
Little Grebe. *Didapper; didabber.* Shakspeare wrote, "Like a dive-dapper peering through a wave"; so that the name, with a slight alteration, still remains.
Greenfinch. *Green Linnet.*
Heron. *Hern; Mollhern.*
Landrail. *Corn Crake.*
Red-legged Partridge. *Frenchman; French Partridge.*
Long-tailed Titmouse. *Bum-barrel.*
Wryneck. *Cuckoo's-mate.*
Ten-spined Stickleback. *Jack Bannell* (Beesley).
Rudd. *Red-eye; Finscale* (Beesley).

I am much obliged to the Editor for the derivation of the name "Quick-me-dick," which no doubt is correct. The term "Wet-my-lip," found in use in West Norfolk by Mr. Gurney, is additional evidence of this. I believe several trisyllabic words are used, both in England and on the Continent, to designate the Quail's note.—C. Matthew Prior (The Avenue, Bedford).

* Want = Mole. Amongst the Sloane MSS., No. 2584, is a receipt "for to take wontis." Still in use.—Halliwell's 'Dict. Arch. and Prov. Words,' p. 915.

Scotland.—In continuation of the list of Scotch names on pp. 329-30, I may add the following, similarly named in Yorkshire and in Scotland:—

Rat. *Ratton* in Yorkshire. The Gaelic is *Radan;* the earlier Scotch spelling *Rattan.* Now commonly called *Rotten* or *Rottan.*

Tawny Owl. *Brown Owl* in Scotland.

I see Mr. Atkinson uses it (p. 330), but not as a local name.

Ring Ouzel. Also called *Moor Blackbird* in Scotland.

Redstart. Same names as in Yorkshire.

Stonechat. *Stonechacker.*

Pied Wagtail. *Dish-washer.*

Black-headed Bunting. *Blackcap* is rarely applied in Scotland, but *Coaly-head* is commonly bestowed on this species.

Chaffinch. *Spink.*

Rook. *Craw.*

Wild Duck. *Grey Duck.*

Scoter. *Douker.*

This name is usually applied to any Sea-ducks which at times frequent fresh water, as the Golden-eye and Tufted Duck.

Tern. *Sea Swallow.*

Cormorant. *Scart,* or *Scarf;* compare with *Scarth* in Lancashire.

Sparrowhawk. *Blue Hawk* is the name commonly bestowed upon this bird in Scotland. I do not know it as applied to the Hen Harrier (p. 334).

Long-tailed Tit. *Bottle Tit.*

Reed Bunting. *Blackcap* is rarely applied to this bird in Scotland, but *Coal-head* or *Coaly head* is common. In different localities both these latter names are also applied to the Cole Titmouse.

Goldfinch. *Goldie* in Scotland.

I am not aware that this name is anywhere applied to the Yellowhammer in Scotland, but I still await returns from any southern county.

Greenfinch. Also *Green Linnet* or *Lintie* in Scotland.

Lapwing. *Teuchet* in Forfar and Fife; compare with *Tufit,* the name applied to this bird in Yorkshire.

"Cuddy," the Yorkshire name for the Hedgesparrow, is also applied to young Lythe, or Coal-fish, or Pollack, in the North and West of Scotland. "Tade," or "Taed," is applied also to the Toad, and "Ask" also to the Newt.

Mr. James Lumsden is working at the same subject, with a view to prepare a list of the Birds of Scotland for the Glasgow Natural History Society, and we are assisting one another in our work.—JOHN A. HARVIE BROWN (Dunipace House, Larbert, N.B.)

CORRECTIONS OF ERRORS.—In the Rev. J. C. Atkinson's Yorkshire list (p. 330), the local name for the Weasel should be "Ressel or Rezzel"; for the Shrew, "Blind Mouse"; for the Swift, "Devil-skriker" ("no Cleveland person ever says 'shriek,' always 'skrike'"); for the Heron, "Hernsew." "Saddleback" is one of the synonyms of the Hooded Crow, not of the Rook. Page 330, fifth line from bottom, and p. 331, thirteenth line from top, *cf.* not *c.f.* P. 330, third line from bottom, Lincolnshire, not Lancashire. "Höggormr," not "Höggormv."

OCCASIONAL NOTES.

BLACK RAT IN CORNWALL.—On August 9th I killed a Black Rat in the cliff at Prussia Cove, Marazion. The dentition was that of an adult, but the animal was about half the size—or a little more—of an ordinary rat, black all over, except the tip of the tail, which was white. The eyes were very prominent, feet large, skin under the fur very white, and the insides of the ears white and hairless. The tail was covered with smooth small hair throughout its length, and was longer than the body and head. Beyond all question it was not a common rat, and from the above description it will be seen that in many respects it resembles the Old English Black Rat, which, although rare in this district, is not extinct. The fishermen here identified it as one of a species which escaped from the wreck of the Italian grain-laden ship 'Espagnol.' She was wrecked in Acton Cove, about a mile from this place, some three or four years ago. Immediately afterwards the whole of the surrounding district was swarming with these little rats. One man told me that his cat brought them in day after day for a fortnight; another had a terrier dog which became clever at finding and killing them, and so on. I have no work on the Mammalia with me, and therefore describe the rat as I saw it.—THOMAS CORNISH (Marazion).

[Might not this be the *Mus alexandrinus* of Southern Europe, considered by M. de l'Isle to be a geographical race of *Mus rattus*, and the older or parent breed? See Bell's 'British Quadrupeds,' 2nd ed., p. 306, note.—ED.]

"BRIBE-BUCK."—In 'The Zoologist' for September (p. 326) Mr. Reeks asks the derivation of "bribed," as applied to the quartering of a buck. I would suggest that "Divide me like a bribe-buck" may be paraphrased as, "Portion me off like a buck when it is cut up,"—"bribe" being derived from the Anglo-Saxon *brytan*, to break; the "breaking" of the deer being a term frequently used for quartering. In that old romance-poem "Sir Gawayne and the Green Knight" (date about 1360), there are most detailed and interesting descriptions of a deer hunt, a wild-boar hunt, and a fox hunt. In speaking of the breaking of the deer, the following line occurs (l. 1339):—

> "Sithen *britned* thay the brest and brayden hit in twynne."

Our own "bribe" (= undue reward) comes from the same root, *brytan*, through the Low Latin *briba*, a scrap of bread, "bribe" having the primitive idea of the scraps of bread or leavings after meals; old French *briber* = to beg. Hence (1) favours or alms bestowed on the poor, (2) rewards generally, then (3) rewards given or offered for corrupt purposes.—EDWARD A. FITCH (Maldon).

[It appears to us that the word "bribe," or as some editors of Shakespeare read it "brib'd," must be derived from the French *briber*, to steal, in which signification it is often used by old writers; for instance, by Chaucer, who writes "bribours" for thieves (see 'The Frere's Tale,' Aldine ed., ii. 248). In a parliamentary Roll of Edward the Fourth's time (Rot. Parl. 22 Ed. IV., n. 30) mention is made of persons who "have stolen and bribed signetts," *i. e.*, cygnets. The word no doubt is an old hunting term borrowed from Norman times, and when it is remembered that the first thing a deer-stealer would do would be to cut up the stolen animal and distribute it amongst his fellows, to lessen the chance of detection, it seems clear that when Falstaff is made to say, "divide me like a brib'd buck," he meant "cut me up and distribute me as you would a stolen deer."—ED.]

GAZELLE HAWKING IN EGYPT.—With reference to the remarks under this head at p. 337, I may mention that, according to Canon Tristram,* the falcon used in the Sahara for the chase of the Gazelle is the Saker, *Falco sacer.* I do not think that any of the jerfalcons would live in Africa, and have never heard of their being brought there.—J. H. GURNEY (Northrepps Hall, Norwich).

SEAL KILLED IN A SLUICE.—A Seal was killed, on September 9th, at Leiston, in this county. It was shot while lying on the end of the Minsmere Sluice, which drains a large stretch of marshes here, and runs out some distance to sea. It is a young animal, and in good condition, weighing just thirty pounds, and measuring forty-one inches in length. It is being preserved by Mr. T. E. Gunn, of Norwich. The man who shot it saw one on the beach near this place some eight or ten years since.—G. T. ROPE (Blaxhall, Suffolk).

DOUBLE MIGRATION OF THE WOODCOCK. — Some of your readers who study the habits of birds may be interested to hear that we have had in this district for the last two or three years what I believe to be two migrations of the Woodcock—one the usual winter migration, the other what I will call a summer or larger flight of birds that arrive in April or a little before that time to nest, and which leave with their young about the latter part of August or in the first week of September, as is the habit of Snipe in one or two localities that I could name. Robinson, in his 'Natural History of Cumberland and Westmoreland' (1709), alludes to something similar in respect to the Swan when it used to nest in this district. He says:—"There come every year a number of Swans to winter upon this water (Bassenthwaite Lake), and in the spring they breed upon the little islands in the water, or in the sedge growing by the side of it, and as soon as the young brood take wing the old ones carry them into southern rivers." The migratory habit of birds is a very interesting study, and particularly that of the wading and swimming class; and having been a wild-fowl shooter for the last twenty years on various parts of our sea coast, but more particularly in Ireland, I have come to the conclusion that the migratory act in all birds is an acquired habit, originating in the search for food, which after a little time becomes fixed, and then inherited; and is also changeable, as circumstances bring into play a little judgment or reason. It is remarkable that the Woodcock is the only bird known that carries its young in flight, which it frequently does when taking them to the feeding ground at the dusk of the evening, and again early in the morning back to their resting-place in some cover or in the open, as the state of the weather may be. When suddenly disturbed it may be seen mounting over small trees or flying near the ground, carrying a young bird between its legs to a place of safety.—W. KINSEY DOVER (Myrtle Grove, Keswick).

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* 'The Great Sahara,' p. 63.

[The Woodcock is not the only bird that carries its young. The same habit has been observed in the Common Snipe, as we have pointed out in our edition of White's 'Selborne' (p. 101, note); and Guillemots and other rock-building birds transport their young to the water by carrying them in the hollow of the back, between the uplifted wings.—ED.]

THE EUROPEAN QUAIL IN AMERICA.—It appears from a recent number of the American journal, 'Forest and Stream,' that a large number of European Quails have been turned out in the United States, particularly in the neighbourhood of Rutland, Vermont; and that, so far as has been ascertained, the experiment in acclimatising the species there has been successful. This year, it is said, 5000 were shipped to America, and that with the remainder of last year's importation and their progeny, a stock of at least 6000 birds was secured. Many of last year's birds paired and nested, and this year several nests with the full complement of eggs have been found. It is asserted, however, that many of those originally imported have strayed to a considerable distance from the place where they were turned down, and that nests have been found twelve or fifteen miles away. This is only what might be expected in the case of a migratory bird like the European Quail, and it is probable that, unless a fresh importation is made annually, and the stock of breeding birds thereby kept up, the whole colony would gradually disperse, and finally disappear from the spot where they were first introduced to American soil.—J. E. HARTING.

THE GREY WAGTAIL GREGARIOUS AT ROOSTING TIME.—I noticed a curious thing the other evening (August 19th), about 7.30 P. M. My brother and I were botanizing round a reedy lake, when we became aware of the presence of a number of Grey Wagtails, *Motacilla boarula*, in a small patch of *Arundo phragmitis*, covering an area of about thirty yards by ten. They continued to arrive in parties of three, four, and five, until there were at least a hundred assembled. They made a low chirping and fluttering amongst the reeds, where they were evidently preparing to roost. It was curious to see many of them clinging on tail vertically to the upright and bare reed-stems in what seemed a very uncomfortable sleeping position. We watched them for about half an hour, and left them still increasing their numbers. This species of Wagtail is not very common in this part of Ireland, and we could not help wondering at the numbers. Some of them must have come a long way to their roosting tryst. The Yellow, or Ray's, Wagtail I have not seen here this year at all.—H. CHICHESTER HART (Currablagh, Croaghross, Letterkenny, Co. Donegal).

[If we mistake not, this is a newly-observed habit of the Grey Wagtail. We have frequently met with large numbers of the Pied and Yellow Wagtails in autumn, when they were flocking preparatory to emigration; but we do not remember to have heard before of the Grey Wagtail roosting in flocks.—ED.]

PURPLE HERON AND WOOD SANDPIPER AT SCILLY.—On September 2nd I received from Mr. Smith, the Lord Proprietor of the Scilly Islands, a good specimen of the Purple Crested Heron, in its rufous immature plumage, in good condition. A minute description of the plumage of the bird is unnecessary; but I may remark that the top of the head, instead of being black, is a beautiful plum-coloured purple, very like the tone of colour seen in plums and grapes with a powdered bloom. The other bird sent over to me is a very good specimen of the adult Wood Sandpiper. Nearly every specimen that I have hitherto procured of this species in the autumn has proved to be a bird of the year, indicated by the light tips of the feathers being strongly tinged with yellow. In this specimen the colour of the spots is pure white.—EDWARD HEARLE RODD (Penzance).

KNOT RETAINING ITS SUMMER PLUMAGE.—On the 30th August I was shore-shooting on the Stirlingshire coast, and saw a Knot with part of the breast bright chestnut. It passed and repassed me and a friend, but we failed to secure it. This is the first Knot I have seen upon our coast retaining any part of the true red plumage until its arrival here in autumn. Shore-birds are this season, however, decidedly earlier in their advent. I have shot hundreds of Knots, many with the buff breast, but none with the decided brick-dust or chestnut-coloured breast.—J. A. HARVIE BROWN (Dunipace House, Larbert, N.B.)

A FIGHT BETWEEN A PAIR OF KESTRELS.—On the afternoon of the 17th August, at Keswick, near Norwich, a gentleman observed two Kestrels fighting and screaming in the air, and saw them drop something, presumably the prey they were fighting for, which, however, was not picked up. The birds continued their fight until they descended to the ground, and afterwards till they were fired at and killed at one shot by the spectator. They proved to be male and female, the male adult and the female apparently adult also.—J. H. GURNEY (Northrepps Hall, Norwich).

HOOPOES ON THE SUSSEX COAST.—Two Hoopoes, *Upupa epops*, were shot during the week ending August 24th, between Sidlesham and Selsea. It is not often that this bird is met with during the autumn migration, although scarcely a spring elapses without one or two being seen, and occasionally shot.—WILLIAM JEFFERY (Ratham, near Chichester).

HOOPOE IN THE ISLE OF WIGHT.—On the 20th August a Hoopoe was killed at Spring Vale, Isle of Wight. It had been seen about the place for a week previously. It was shot by Capt. Calender on the lawn of Springfield House, and proved to be a male bird in good plumage. This is the third that has been obtained here within the last ten or twelve years.—GEORGE A. CARELESS (Seaview, Isle of Wight).

HOOPOE IN GLOUCESTERSHIRE.—It may interest some of your readers to know that a Hoopoe was seen at Charfield Rectory, near Wootton-under-Edge, on September 2nd. The bird remained feeding on the lawn for some time after it was perceived, and approached within a few yards of the house.—R. P. DAVIES (Rector of Charfield).

HOOPOES AT THE LAND'S END.—We have had an unusually early visit of Hoopoes this autumn. On an estate contiguous to the Land's End, a full-grown but pale-plumaged male of this species was shot on August 24th, and two or three more were observed about the place—apparently young birds.—EDWARD HEARLE RODD (Penzance).

A DESTRUCTIVE SUMMER SEA.—I should like to call the attention of your readers to the following facts:—On Thursday, August 29th, at 1.30 P. M., the fishermen of Prussia Cove, Marazion, were waiting for the coming of the tide to go to sea. Suddenly, without any warning whatever, a very heavy gale of wind blew into the Cove from the south, and continued to blow for about an hour. It then rapidly moderated, but was succeeded by such a sea as has never been seen here in summer time within the memory of man, and has rarely been equalled in the wildest winter weather. This sea continued until the turn of the tide, which was then at the top of the spring. When the sea receded, it was found that two boats, which had sunk at their moorings, were utterly destroyed; one, which had broken adrift, was also destroyed; and another, which had also sunk at her moorings, met with injuries which are practically irreparable. All the other boats were injured. These four boats were owned by men of the poorest class, whose living, with that of their families, depends entirely upon their fishing. Without the means of replacing their craft, these people have nothing to look forward to in the coming winter but absolute starvation or the Union. I was present myself during the whole of the scene, and can bear the fullest testimony to the fact that the men did everything in their power to save their property;

indeed, I saw very daring acts done. I venture to suggest to your readers that a subscription to help these men should be made, and I shall be very happy to receive for them any money which may be forwarded to me for the purpose. Many of these fishermen have enabled me to bring to the notice of naturalists some of the rarer fishes and Crustacea found off the coast of Cornwall. So far as I can ascertain, the total loss sustained by the men is about £30.—Thomas Cornish (Penzance).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Entomological Society of London.

August 7, 1878.—H. W. Bates, Esq., F.L.S., F.Z.S., President, in the chair.

A communication was read from Mr. M'Lachlan, to the effect that, in the writer's opinion, the larva referred to by Prof. Westwood, at the last meeting of the Society, as boring in the stems of the potato, was in all probability that of a Noctua, *Gortyna flavago*, polyphagous in the stems of a variety of herbaceous plants—foxgloves, thistles, burdock, &c.

Mr. S. Stevens exhibited some living specimens of *Teretrius picipes*, found on oak palings at Upper Norwood—parasitic on *Lyctus oblongus*—running in and out of the burrows during the hot sunshine; also specimens of *Pachnobia alpina*, male and female, bred by Mr. Clark, who found the pupæ under *Vaccinium* on the highest parts of the mountains above Rannoch, N.B.

Mr. Enock exhibited some remarkable varieties of British Lepidoptera, recently described and figured elsewhere.

Mr. Rutherford stated that he had been successful in rearing certain larvæ associated with the cocoons of a moth allied to *Anaphe panda*, exhibited at a previous meeting. They proved to be those of an ichneumon ascertained by Mr. F. Smith to be *Cryptus formosus*, Brullé, parasitical also on *Anaphe reticulata*. A number of specimens of the insect, both preserved and alive, were exhibited.

Mr. Rutherford also exhibited a series of colour-varieties of an African butterfly, viz. *Aterica Meleagris*, Cram., as illustrative of the principle of protective assimilation. He remarked that all the species belonging to the genus *Aterica* were shade-living and extremely local in their habits, with the solitary exception of *Meleagris*, which he had never found in shady places, but always in bright sunshine. He had never observed it settle on leaves, but always on the ground, and with closed wings, the under side of which have such a resemblance to the colour of the soil that he had always experienced the greatest difficulty in detecting the butterfly when at rest.

That this was no mere chance resemblance was evident from the nature of the illustrations exhibited. Thus, the under sides of the wings of two examples from Senegambia were of a dull brown colour, the soil of that region consisting of reddish sand and ferruginous clay, while specimens from Calabar and Camaroons had their under sides coloured light brown, with numerous small white spots, the soil of these countries being composed of light brown clay and small quartz pebbles. Similarly, examples from Natal and the Mozambique coast approached in colour those of Senegambia, that of the soil being nearly the same. Specimens taken at Magila, in the Ussambara country, were of two varieties, one of a dull red colour, that of the soil, and the other brownish, with white spots, the habit of the insect being to settle both upon the ground and also upon granite boulders, with which that region abounds. Five examples from the banks of the Atbara, in Nubia, showed all the varieties occurring in other localities, this being accounted for by the colour of the various deposits of sediment likely to be made by a river passing through such a series of geological formations as occur between Abyssinia and Nubia. It would thus appear that *A. Meleagris*, through some original resemblance in the coloration of its wings to certain conditions of soil, has been able to resist the attacks of its natural enemies, and thus, meanwhile departing from the habits of the family to which it belongs, had acquired the power of distributing itself throughout a large area of country.

Mr. Jenner Weir considered that Mr. Rutherford's views might be extended to the colour variations of *Hipparchia semele*.

Mr. Wood-Mason referred to the many cases of protective resemblance exhibited in the *Mantidæ*.

Major Elwes considered that too much stress was laid on "protective resemblances," and from a study of the birds of Northern India, had come to the conclusion that the colour variation showed neither for nor against the theory.

Mr. Distant adduced some instances of what appeared to be protective coloration, and stated that he thought in many cases, without further knowledge, the term "assimilative coloration" would be as correct as the designation of "protective resemblance."

The President alluded to the beautiful protective adaptation of coloration in the wings of the lepidopterous genus *Kallima*.

Mr. J. Jenner Weir exhibited five specimens of *Argynnis Paphia*, which he had captured during the month of July in the New Forest, Hampshire. The first was a singular aberration of the male, having two well-defined white spots on the upper wings and two faint white spots on the lower wings; he had heard of similar specimens having been taken in former years, and one other was observed in the present year. The second was a normal specimen of the male, introduced for comparison with the third and fourth males exhibited. With regard to these two, Mr. Weir remarked that it was well known that a melanic variety of the female of *Paphia* known as *Valezina* was observed every year in the New Forest, and it appeared to him that if he carefully examined a sufficient number of males he might find some which, although not strictly *Valezina*, yet showed a tendency to melanism. After examining a large number, he found two males much darker than usual; the ground colour of the wings was redder, and the four enlarged nervures were very much more deeply edged with black. He was of opinion that these were potentially males of *Valezina*, and that from such males the female of that dark variety would be more likely to originate than from a male of the ordinary colour. The fifth, specimen was a true *Valezina*, and he remarked that this year *Argynnis Paphia* was unusually scarce, yet the proportion of *Valezina* was much greater than usual; certainly not less than ten per cent. of the females were so coloured, the usual proportion not being greater than about one per cent. He had himself captured eleven *Valezina*, and had seen three others, and he had not altogether seen one hundred and forty females, if so many. Mr. Weir was confident that the melanism extended to a great extent over the whole of a brood, as eight of those taken were found within a few yards of each other; and in another spot he and his friends had captured fourteen within a short distance of each other; at the same time none were seen in other woods where the species was common. It might perhaps be argued that the melanic variety was confined to particular woods, but such did not appear to be the case, as in spots where he and his friends had seen *Valezina* in former years none were to be found this year. The female of *Argynnis Paphia* when startled usually flies up into a neighbouring tree, and does not wander about, as does the male. He had seen a female in the act of oviposition, and each egg was laid singly low down in the moss-covered stem of the oak; but as far as he was able to judge, all the eggs were deposited within a few yards of each other.

The President remarked that some seasons were probably more favourable than others for the production of dark *Paphias*, still the dark forms might make a new subspecies.

Mr. J. Wood-Mason read a paper "On the Difference between the form of the Antennæ in the Males of *Idolomorpha* and other Genera of *Empusidæ*, a Subfamily of *Mantidæ*."

Mr. Dunning read a paper "On the Genus *Acentropus*."

Papers were also contributed by Mr. Butler, "Descriptions of several new Species of Myriopoda of the genera *Sphærotherium* and *Zephronia*," and by Mr. Baly, "Descriptions of new Genera and Species of South American *Eumolpidæ*, chiefly from the Amazon Region."

Part II. of the 'Transactions' for 1878 was on the table.

NOTICES OF NEW BOOKS.

On the Frontier; Reminiscences of Wild Sports, Personal Adventure, and Strange Scenes. By J. S. CAMPION, late Major, U.S.A. 8vo, pp. 372, with eight illustrations. London: Chapman and Hall. 1878.

PARTLY through love of sport, partly in exercise of military duties, Major Campion found himself, for many months at a time, across the Mexican frontier, in the land of Indians and Buffaloes, an exile from all the comforts of civilization, leading a kind of wild life, suffering at times great deprivation, and incurring not a few dangers. Notwithstanding the unsettled state of affairs with many of the Indian tribes likely to be encountered *en route*, and contrary to the advice of friends, the author, one of a party of five, fully equipped and well mounted, set forth upon his journey.

From the starting-point a waggon trail led for about a hundred miles to Fort Riley; thence a few days' travelling further west would bring the party to where Buffaloes were to be found. The route to Fort Riley lay through the land of the Pottowattomies, a partly civilized tribe, and then across a portion of the country claimed by the Pawnees. These latter were "wild," and though "treaty Indians," had a well-deserved reputation of being the most expert horse-thieves of the plains.

After leaving Fort Riley, the route lay through a region covered over by bands of Sioux, Cheyennes, and Kiowas—Indians nominally at peace with the whites, but known to be disaffected; three tribes of evil repute, and no respecters of treaties when fortune offered a temporary advantage. Looking back to that trip with his acquired experience, the author wonders how he could have been hare-brained enough to have undertaken it, and how he contrived to return unharmed. He assuredly had many narrow escapes from death in various forms, and considering how fully occupied he must have been in protecting life and property, in tracking and hunting game whereon to subsist *en route*, and in taking active measures to prevent a surprise by the numerous parties of treacherous Indians encountered from time to time on their hunting expeditions, it is surprising that he could have found time to study the habits of the wild animals which he met with, and to note the many interesting particulars concerning them which his book contains.

Wet-mountain Valley, at the foot of the Sierra Verde, extending over an area of forty miles by twenty, enclosed by interlocking peaks belonging to the Rocky Mountain range, and forming a congeries of mountain glades, glens, and small valleys, watered by streams which coursed through osiers and willows, aspens and cotton-wood trees, must be a perfect paradise for explorers who, like Major Campion, combine a love of sport with a taste for Natural History.

"We had the whole valley to ourselves," he says, "and it was full of game—fur, feather, and fin—the streams being full of trout. The game consisted principally of several kinds of deer. In the low valleys and the timber bordering the creeks were 'white-tails,' so called because their tails, which, for deer, are very long—fifteen inches—are quite white on the under side, and they have a way of raising and flourishing them as they gallop away which is very noticeable. These deer have very long legs, standing high for their weight, which averages for bucks in good condition eighty pounds net, and for does in equal condition sixty. They are essentially a creek or valley deer, not frequenting the mountain slopes. Nor do they congregate together in large herds. We often found solitary ones, sometimes two or three, and but rarely as many as a dozen together.

"'Black-tails,' large-bodied, short-legged deer—the bucks dressing a hundred and fifty pounds, the does proportionably heavy—were on the mountain sides, the alps, and the most elevated of the small mountain valleys; being only seen in the plain when crossing from range to range. Large black-tail bucks we often found alone, but it was not unusual to see twenty or thirty black-tails in a herd. On one occasion thirty-seven were counted.

"Last and least, 'spruce-deer,' of which a few small bands ranged high up the mountains; fat, short-legged little fellows, about the size of goats, very hard to find and kill, but furnishing the best venison. Above, far up on the rocky sunny peaks, were droves of the 'Ashlata,' or big-horns—the American equivalent for the 'Argali' of Asia—a true sheep in all respects, though their wool does resemble hair, and whose mutton is, so far as I can judge, the best in the world. In the large valleys were several herds of antelopes [the Prong-horn], averaging about twenty head, but in the 'park' was one of over seventy. They were all very wild and wary, rendered so by being continually chased by packs of wolves. Quantities of elk antlers lay in some of the most retired valleys, some so large that a pair being set up on its points would form an arch high enough to walk under without stooping; but we saw no elk.

"The 'sign' of Bears—black, brown, and cinnamon—was everywhere; but they were 'housed for winter.' Grislies were *said* to be habitants of the country, but I do not believe they were. My experience of Grisly Bears—and I have often made their personal acquaintance—is, anybody to the contrary notwithstanding, that they do *not* hibernate. I think the belief that they do so has arisen from the cinnamon, or more properly speaking the cimmarron (Spanish American for 'wild' or 'savage') bears being continually confounded with them by those who write chiefly from hearsay. They are, however, distinct and separate species, one always hibernating, the other, I think, never doing so. Certainly the Grisly does not hibernate in California, where I have frequently tracked them in the snow in mid-winter through; and as we did not do so in Wet-mountain Valley, I doubt their existence there.

"Wolves were very numerous, and of three species—first and foremost, the Grey Mountain Wolf, the largest and fiercest of the genus, hunting in packs by day as well as by night; next, the Timber Wolf, of a dark bluish grey, a solitary, skulking night prowler; lastly, the Coyóte, a small cunning fellow, always hunting or sneaking about by day or night, singly and in small bands.

"Of Foxes, there were a few Silver-greys, whose fur is the most valuable of the fox family; innumerable common American Grey Foxes; a few specimens of the Red Fox; and many 'Swifts'—the last mentioned a species of fox I have rarely met with, and nowhere as plentifully as in Wet-mountain Valley. He gets his name from his great speed, which is astonishing. I believe he is not only *the* fastest goer of his size, but absolutely *the* fastest of all animals. He is of a blackish grey colour on the back, with a handsome silver-grey, white-tipped tail. His ears, neck, upper fore-legs, and hocks are reddish orange, and the edges of his thighs, belly, breast, and throat pure white. He is as pretty as he is fleet, and can catch a rabbit as easily as a collie can a sheep.

"The cat genus, from Lynx to Pumas, was well represented; Raccoons, Badgers, Mink, Otter, and Beaver were plentiful, and 'varmints' of all kinds abounded.

"Of game birds only wild Turkeys were in sufficient numbers to be objects of pursuit. There were a few Mountain Partridges, and some Wood Grouse; but wild cats and foxes kept them very scarce, as they also did rabbits and mountain hares. The Turkeys differed slightly from those we had been in the habit of shooting farther north and east. They were much lighter and more parti-coloured in their plumage, showed much more white and brown markings, but had the same calls and habits.

None of the flocks were large. They ranged from a dozen to thirty head to the 'drove.'

"Of predatory birds first mention belongs of right to 'the king of the air,' the great American White-headed Eagle, who in that locality was, for him, numerous. Turkey-buzzards could be always seen wheeling aloft, and occasionally some immense Vultures; but we were not able to get a close inspection of any of them, for they kept out of shot. Had we not been so far north of the limits assigned by naturalists to the Condor, we should, from their size and flight, have believed these birds to be such. Hawks and Owls of many varieties were there, and Magpies and Jays were more plentiful than welcome, for they were very bold and great nuisances, pilfering our meat, springing our traps, and alarming game that we were stalking by screaming out at us; in short, by making themselves generally detestable; and small birds, not game, abounded in every wood and thicket—many of familiar kinds, many of strange ones."

The diversion of "Turkey-roosting," as it is called, is not without its attractions for the sportsman; and being a mode of killing Turkeys only practicable in few places and at certain times, can be but occasionally indulged in, and so possesses the added charm of rarity. The full of the moon is the opportunity for Turkey-roosting, and the first necessity is to "roost your Turkeys." This is done by watching, from a little before to some time after sunset, on an eminence commanding a view of some range of timber in which Turkeys are likely to roost. Having marked them down, the shooter stealthily approaches the trees in which the birds are perching, and looks about until he can see one sitting. His object is then to "moon his Turkey"—that is to say, to get a partial Turkey eclipse of the moon by bringing his eyes, the bird, and that luminary in a line. This being accomplished, he brings his rifle to his shoulder, pointing it horizontally in a direction which would meet at right angles a perpendicular from the ground to the bird. In this position the moonlight falls full on the barrel of his rifle and lights up its sights. The hunter draws the front sight well down in the notch of the hind one until he gets his "bead," then he carefully raises his weapon until the shadow of the Turkey falls upon it. As the rifle-sights darken, the hair-trigger is touched, and if the sportsman's nerve be steady, his eye and finger true, and his rifle what it ought to be, a prize well worth the exercise of his skill will drop with a heavy thud at his feet.

It was on returning from a night's sport of this kind that the author witnessed a singular attack by Wolves on a herd of Antelopes, which he thus describes:—

> "We arrived at the crest of a hill overlooking a wide vale while it was yet illuminated by the full semi-tropical moon, by whose light we had been shooting, and, casting a glance over it, observed a pack of Grey Wolves surrounding a herd of feeding Antelopes. We paused to watch their proceedings. About fifty wolves were spread out in a great semicircle, crawling and sneaking along, their grey coats hardly visible in the silvery light. As the horns of the semicircle commenced to close round the herd of Antelopes, some among them got the wind of the Wolves, and giving the alarm, the whole herd immediately closed up and stood looking about them, hesitating which way to fly. Simultaneously the Wolves rushed in, and the Antelopes scattered in all directions, the bulk of them breaking through the line of their assailants, but some half-dozen being pulled down, torn to pieces, and devoured instantly. Then the Wolves packed, and started in a long swinging gallop on the tracks of the flying herd, giving tongue as they ran, like a pack of hounds."

Major Campion's remarks on the Beaver, its habits, and the mode of trapping it (pp. 147—165) are very interesting, but too long to be quoted here. The height of the "dam," he says, varies with the rapidity of the streams they are built across, and where the current is fast the fall of the water-course is great; and then they require to be high, otherwise the water would not be backed sufficiently for it to make a pool of adequate size.

> "In mountain streams about eight feet is their average height. For instance, suppose you stood below one regarding it, then the dam would stretch across in your front, from bank to bank, eight feet high, and present a perpendicular face of branches, with their butt-ends towards you; these ends varying in size from half an inch to two inches in diameter. This is undoubtedly the right way for the sticks to lie, as is well known by all engineers who have had occasion to make 'brush-dams'; and the reason is obvious, for as the smaller twigs and forks on each branch, when laid in such a manner, face the stream, they catch all sediment coming down with the water, which, lodging, helps to make and keep the 'dam' water-tight."

With this extract, we must conclude our notice of Major Campion's book. From the passages above-quoted, the reader will be able to judge not only of the author's style, but also of the sort of information which he has to impart on the Zoology of the country explored by him.